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## Lab closer to understanding nebula

By Sheri Byrd

NEWSLINE STAFF WRITER

Scientists may be closer to understanding the formation of the famous Eagle Nebula columns of galactic gases and dust, thanks to the recent analysis of Lab physicists Jave Kane, Dmitri Ryutov and Bruce Remington.

"In computer simulations, our revised Rayleigh-Taylor model shows it has a very good chance of explaining the pillars of the Eagle Nebula," Kane said.

This nebula is known for its spectacular towering columns called the Pillars of Creation, which reach almost 6 trillion miles high. Formally known as M16, the Eagle Nebula is located in the constellation Serpens, about 5,700 light years from Earth, and became well known after the Hubble Space Telescope captured a dramatic image of the pillars in November 1995.



JEFF HESTER AND PAUL SCOWEN (ARIZONA STATE UNIVERSITY), AND NASA

Known as the Pillars of Creation, the gaseous columns that make up the Eagle Nebula reach almost 6 trillion miles high. Recent analysis by Lab scientists may provide insight into how the Eagle Nebula was formed.

"Ours is a modified version of Rayleigh-Taylor," said Kane. "It explains detailed observations made in the last few years with the

See **NEBULA**, page 7

## Fruits of Human Genome Project's efforts highlighted in issues of *Nature*, *Science*

NEWSLINE STAFF REPORT

Issues of *Science* and *Nature* magazine this week contain detailed analyses of the human genome sequence working draft. The *Nature* papers analyze the sequence generated by the publicly sponsored U.S. Human Genome Project (HGP), while the *Science* publications focus on the draft sequence reported by the private company, Celera Genomics.

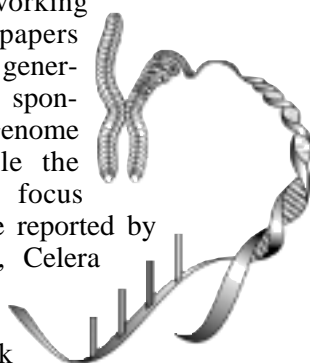
The Laboratory contributed to work behind the analyses as part of the Joint Genome Institute, located in Walnut Creek. Other labs involved in the JGI include Lawrence Berkeley and Los Alamos. Previously the three labs had worked individually until joining forces in 1996. Together, the JGI research accounted for 11 percent of the entire genome. LLNL scientists initially mapped chromosome 19, while LANL scientists worked on chromosome 16 and LBNL worked on chromosome 5 before joining forces through the JGI.

Most of the effort to map this genetic blueprint has been directed by three public institutions: the National Institutes of Health, the Department of Energy and England's Sanger Center.

The analyses provide scientists worldwide with a virtual roadmap to an estimated 95 percent of all genes. All publicly generated HGP data are available on the Internet.

While the HGP draft sequence contains gaps and errors, it provides a valuable scaffold for gen-

See **GENOME**, page 7



## Biomaterials research leading to implants that will promote body's 'normal healing'

By Sheri Byrd

NEWSLINE STAFF WRITER

"At the start of the 21st century, biology is where the excitement is. It was physics in the first half of the 20th century, but biology is where we're now seeing the big breakthroughs," said Buddy Ratner of the University of Washington.

Ratner's reasons for this observation were the subject of his Director's Distinguished Lecturer Series presentation, made last week before a packed auditorium. His talk, "Biomaterials That Heal," focused on the continuing collaborative work of biologists and materials scientists use to overcome the body's natural response to foreign

material.

Ratner is director of the Engineered Biomaterials Program at the University of Washington, where he and his team have devised sophisticated processes for coating artificial materials so that their surfaces can attract and bind specific proteins, which promote normal healing.

"Today we implant a large range of artificial body parts: eye lenses, hips, knees, veins, heart valves and more," Ratner said. Other items are placed in the body on a temporary basis, such as catheters.

While these devices save or improve the lives of millions of peo-

See **BIOMATERIALS**, page 7

## Energy crunch refuels nuclear debate

By Don Johnston

NEWSLINE STAFF WRITER

With energy demands growing to meet the needs of an expanding global economy, nuclear power is undergoing a "renaissance," according to Denis Beller, a nuclear engineer at Los Alamos National Laboratory.

"Nuclear power is now in resurgence," Beller said. "Nuclear power plants in the United States had record performances in 1998, '99 and 2000."

Against a backdrop of rolling blackouts across Northern California, Beller spoke to a packed



Advertising to promote the use of nuclear energy will soon appear on Indy race cars.

meeting of the American Nuclear Society's local chapter in Pleasanton last month about "The

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**EUVL named top technology**

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**Keeping tabs on Lab's classified**

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**Assistance to get on Learning Curve**

— Insert





## LAB COMMUNITY NEWS

### Weekly Calendar

Technical Meeting Calendar, page 4

Friday  
**16**

The Amigos Unidos Hispanic Advisory Group is sponsoring a **Valentine's Dance** tonight from 7 p.m. to midnight in the South Cafeteria. The dance is open to the public. Tickets are \$12 per person or \$20 per couple. Hors d'oeuvres, dessert, prizes and non-alcoholic beverages will be offered. (All proceeds go toward the scholarship fund.) Contact: Alicia Salmeron, 3-0769, Santiago Parra, 4-2811, Xavier Cabrales, 2-7448, or Patricia Martinez, 3-9080.

Monday  
**19**

**Presidents' Day.** The Lab is closed.

Tuesday  
**20**

**C o d e p e n d e n t s Anonymous** (CoDA) meets every Tuesday at noon in Bldg. 571, room 2016. The group offers 12 steps to recovery from codependency. Contact: Mike, 3-4827, or Jane, 4-4689.

Thursday  
**22**

The Center For Global Security Research will present **"After Globalization: Future Security in a Technology Rich World,"** by TJ Gilmartin, senior fellow, at 10:30 a.m. in Bldg. 132S, room 1784. The results of the yearlong futures project on threats to the United States in the 2015-2020 time frame due to the globalization of nuclear, missile, space, military, information, biology, and geosystem technologies will be presented. Contact: Tami Alberto, 2-5969.

Friday  
**23**

The Benefits Office will kick off a **brown-bag series** on how to enhance your financial security by participating in the Tax-Deferred 403(b). The first session will be held at 12:15 p.m. in Bldg. 571, room 2301; additional sessions will be held on the last Friday of each month throughout 2001. Attendance is open and no pre-registration is required. Bring your lunch and your questions. For more information, go to [www.llnl.gov/jobs/benefits](http://www.llnl.gov/jobs/benefits).



The Lab **Retirees Travel Slide Group** will meet Feb. 27 at 2 p.m. in the Livermore Library meeting room. Richard Hasbrouck will present "Driving through Portugal." Contact: 449-7262.



**LAB TV**

**BROADCAST  
SCHEDULE**

A segment of the Lab's community television show, **'Technology Today'**, featuring physicist Peter Fiske, will air on Lab TV channel 4 on Tuesdays and Thursdays, Feb. 20-March 1 at 10 a.m., noon, 2 and 4 p.m.

### Stellar student ready for space camp

John Cromie, an 18-year-old senior at Granada High School in Livermore, is one of 10 students in California selected by Gov. Davis to participate in the second annual Take a Teen to the Kennedy Space Center Program. He was nominated by Assemblywoman Lynne Leach, based on his strong showing in the Tri-Valley Science and Engineering Fair (his project, in collaboration with two other students, was an electromagnetic linear accelerator). Leach recently came to the Lab to present Cromie with a proclamation. Cromie also received recognition from the Livermore City Council and the Livermore school district. "He has gone above and beyond what we expect of a young person at this age," Leach said of Cromie. "With young people like John, it's going to be a very good future."



JULIE KORHUMMEL/NEWSLINE

### Saturday lecture focuses on quake predictions

The Lab's Science on Saturday lecture series begins tomorrow with a talk on "Can You Predict Earthquakes?" from 9:30-11 a.m. in the Bldg. 123 auditorium.

Lab researcher Andrea Cook and Monte Vista High School science teacher Stan Hitomi will lead the talk.

Cook, who has done extensive study of volcanic eruption and earthquake prediction using the Laboratory's Center for Accelerator Mass Spectrometry, and Hitomi, who has worked on earthquake prediction research with Cook, will not only be talking to students about how earthquakes and other natural disasters can be predicted, but will teach the science behind it.

Science on Saturday is a six-week series of free 90-minute talks geared toward middle and senior high school students.

The lectures, which cover subjects ranging from whether our drinking water is safe, to what makes the wind blow, to what do genes really do, will be offered every Saturday, Feb. 17 through March 24, from 9:30 to 11:15 a.m.

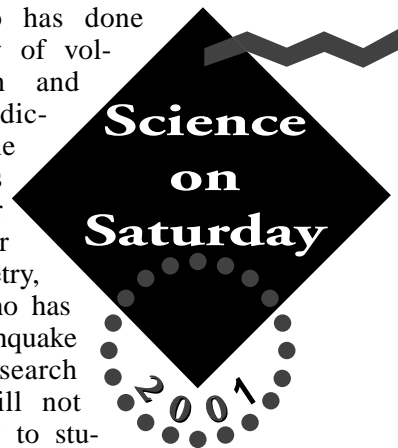
All of the talks will be in the Bldg. 123 auditorium, and are open to students, their parents or guardians and teachers.

Registration is at the door and seating is available on a first-come, first-served basis, with priority given to students and teachers.

The series is co-sponsored by the Laboratory's Science & Technology Education Program and the Livermore chapter of Sigma Xi, the Scientific Research Society.

Next Saturday's lecture, "How Do We Know if Our Drinking Water Is Safe to Drink?" will be given by Bryant Hudson of LLNL's Analytical and Nuclear Chemistry Division and Livermore High School teacher Sarah Palmer.

For more information on Science on Saturday, check the Web at <http://education.llnl.gov/sos> or call the STEP information line at 2-6818.



### RETIREMENTS

#### Jim Fox

Jim Fox, facility point of contact and building coordinator for the Physics directorate, is retiring after more than 34 years at the Lab. A celebration to wish him well will be held at noon Friday, March 2, at the Willow Tree Restaurant, 6513 Regional St., Dublin.

Cost is \$15 and includes lunch, tax, tip and gift. RSVP with payment by Feb. 23 to Ida Hartman, Bldg. 121, room 2037 (3-2655); Bertie Gros-Baumgartner, Bldg. 121, room 1103 (3-7751); Vickie Stone, Bldg. 121, room 2031 (2-7374); or Renee Lopez, Bldg. 121, room 1018 (3-9597).

### IN MEMORIAM

#### Robert Dye

Robert E. Dye, a retired computer programmer, died Feb. 9 in his Walnut Creek home. He was 75.

Dye worked as a programmer of scientific software and nuclear data. He retired in 1988.

He was born in Middletown, Ohio, and lived in Walnut Creek for 40 years. He graduated from UC Berkeley and enjoyed genealogy and history.

Survivors include his wife of 50 years, Joyce; daughter Susan; son Steve; and two grandchildren.

Services were private. Contributions in his memory may be made to the Contra Costa County Library, 1750 Oak Park Blvd., Pleasant Hill, 94523, or Home Health Plus Hospice, 901 Sun Valley Blvd., Suite 220, Concord 94520.

### Newsline

Newsline is published weekly by the Internal Communications Department, Public Affairs Office, Lawrence Livermore National Laboratory (LLNL), for Laboratory employees and retirees.

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Web site: <http://www.llnl.gov/PAO/Newsstand/internal-comm.html>



## AROUND THE LAB



# Program allows employees to donate vacation leave

Laboratory employees may now donate vacation leave through a newly implemented Catastrophic Leave Sharing Program. The program, which became effective Feb. 1, allows eligible employees the opportunity to voluntarily donate accrued vacation leave to support colleagues who have exhausted their paid leave balances due to their own serious illness/injury or in caring for a seriously ill/injured eligible family member.

Voluntary donations can aid co-workers at the Lab with salary continuation during needed leave, thereby alleviating the financial burden created by unexpected or extended illness/injury.

Catastrophic illness or injury is defined as a serious illness or injury that is expected to incapacitate the employee or the employee's family

member and which creates a financial hardship to the employee due to exhausted leave credits, i.e., sick leave and vacation leave.

Eligible recipient employees include all career indefinite and flexible term employees, except those who work on an indeterminate time basis. Prior to submission of a request, the employee must have exhausted or expect to exhaust all available paid leave benefits.

Eligible family members include the employee's spouse, parent, child, sibling, grandparent or grandchild; in-laws and step-relatives in these relationships; or other persons residing in the employee's household for whom there is a personal obligation.

To donate leave, you must be a career indefinite or flexible term employee, provided you are

not working on an indeterminate time basis. All donations are irrevocable and shall be voluntary and at the discretion of the donor employee.

Eligible leave credits for donation are limited to accrued vacation credits. Eligible donating employees who have reached their maximum vacation accrual limit may donate accrued vacation credits in a month in which they might otherwise lose additional accruals.

Each donation must be voluntary and a minimum of eight hours and in whole hour increments. Donations may not exceed 50 percent of the donor's vacation balance.

For more information on this program and the forms necessary to request participation as a donor or recipient, check the Benefits Office Website: <http://www.llnl.gov/jobs/benefits>.

## NEWSMAKERS

### Cooper to remain presidential adviser

David Cooper, Computations AD and the Lab's chief information officer, has been invited by President George W. Bush to continue to serve on the President's Information Technology Advisory Committee.

PITAC was established in February 1997 to advise the White House on information-technology matters, including economic and workforce issues, high-end supercomputing, software, scalable infrastructure, modes of research, funding and management. It was then that Cooper began working on PITAC, co-chairing the High Performance Computing and Communications Subcommittee.

Cooper was honored in July 2000 by *Computer World* magazine as one of the "Premier 100 Information Technology" leaders globally, and the only representative from the government sector among them.

Cooper came to the Laboratory from NASA, where he led computational efforts that landed a man on the moon. Now he's leading the effort to build the world's fastest computers to simulate nuclear weapons — racing Moore's Law to reach 100-T-Flops (trillion floating-operations-per-second) in the next three years. During spare



Dave Cooper

moments, Cooper serves on the SC2001 Executive Committee, the international high-performance computing and communication conference scheduled for Nov. 10-16, in Denver.

### EUVL named technology of the year

MicroDesign Resource's *Microprocessor Report*, a respected computer industry analyst newsletter, has named extreme ultra-violet lithography (EUVL) its technology of the year.

"This award is very important within the industry," said Don Sweeney, who heads the Lab's part of the Virtual National Lab consortium of LLNL, LANL and Sandia that developed the next-generation method of microchip lithography. "There is only one given per year."

The award recognizes the overall importance of the EUVL technology. If microchip manufacturing is to continue at the rate it has sustained since its inception — the number of transistors on chips doubling every 12 to 18 months — new production methods must be developed.

This exponential miniaturization of transistors is known as Moore's Law in the chip industry, and has become virtually impossible to maintain with current lithography methods.

The new method uses "soft" X-ray light from the extreme ultraviolet range. The very short light-waves allow the design of microscopic semiconductor patterns so small they have been compared to drawing a quarter on the surface of the earth from the space shuttle.

The EU waves are reflected from a pattern

called a mask, which then is reduced by a series of mirror lens and printed on to a silicon wafer, much like the projection of an image onto film through a camera.

The first EUVL tool is scheduled for demonstration here at the Lab this April. However, commercial availability is not expected for another year or two, with mass production expected in 2005 or later.

"These machines cost about \$25 million each. It's going to take time to build the commercial infrastructure necessary to get this technology into the marketplace," Sweeney said.

Funding for EUVL has come from the private sector. Several major integrated circuit companies, whose livelihood depends on emerging technologies, have poured more than \$250 million in to this project. Intel Corp., Advanced Micro Devices Inc., Motorola Inc., Micron Technology Inc., and Germany's Infineon Technologie AG have created the limited liability company, EUV LLC, a cooperative research and development agreement (CRADA) to back the project, with other companies planning to throw in their support soon.

Any new chip design method must be nearly universally accepted to be of use to consumers, therefore the more producers backing this project, the more practical it becomes.

"This technology has been growing in importance for the last several years," said Chuck Gwyn, general manager of EUV LLC. "But an award like this recognizes the central place it is now taking in the microprocessing world."



JACQUELINE MCBRIDE FOR NEWSLINE

## Spotlight on Spaeth

Physicist Mary Spaeth, chief technical officer for the National Ignition Facility (NIF), was recently interviewed by CBS television for a segment about her inventions to be broadcast on the Monday, March 5 edition of "The Early Show," KPIX, channel 5, San Francisco.

"It pays to know people  
... with BIG ideas!"

### Presenting the LLNL Referral Bonus Program

A Laboratory employee may now receive a bonus award of \$500, \$1,500, or \$3,000 for referring a candidate for employment at the Laboratory.

To receive the award, the candidate would have been interviewed after Jan. 3, 2001, identified the referring employee during the interview process, and be hired into the designated bonus-eligible position.

All full-time and part-time LLNL employees are eligible to participate in the program except for the following: senior management, managers/supervisors within the chain of command of the designated position, search committee members, recruiting & employment staff, and employees covered by a collective bargaining agreement.

A Website has been developed for the program, which includes detailed program rules/provisions, information for participating employees and the listing of bonus-eligible positions.

See <http://www-r.llnl.gov/ERBP>





NEWS YOU CAN USE

Lawrence Livermore National Lab invites you to

**Science 2001:**  
*An Evening Science Series*

**From Rails to Rockets. . .**

**Magnetic Levitation**

**Will magnetic levitation lead to major improvements in rail travel and rocket launching?**

*By Dick Post,*  
*retired from Lawrence Livermore National Laboratory, physicist and holder of more than 30 patents in the fields of nuclear fusion, particle accelerators, electronics mechanical energy storage and magnetic levitation.*

**Feb. 22, 2001**  
**7 p.m.**  
**Livermore High School**

Performing Arts Theater, 600 Maple St., Livermore

Rebroadcasting on **CTV** Channel 28

**LLNL Public Affairs Office, 925-422-4599**  
<http://www.llnl.gov/llnl06news/Community/lecture.html>

Lawrence Livermore National Laboratory presents lectures during the school year to bring important, current science topics to the general public. Public outreach for education is a goal of both the U.S. Dept. of Energy and the University of California. LLNL is operated by UC for the DOE.

Free admission

INTERNAL TRANSFER OPPORTUNITIES

Tag	Requisition	Classification	Title	Organization
FI	1642	105.3	Workforce enhancement & training administrator	Chief Financial Officer's Office
BO	1570	105.4	Principal administrator	Business Services
FI	1507	151.1	Accountant	Finance
FI	1601	197	Accounting services division manager	Finance
HC	1581	200	Industrial hygienist	Hazards Control
EZ	1578	220	Post-doctoral research staff member	Energy & Environment
EE	1638	249	Quality engineer	Electronics Engineering
EE	1639	249	Production engineer	Electronics Engineering
EZ	1671	249	Engineer	Energy & Environment
HC	1500	249	Industrial safety subject matter expert	Hazards Control
HC	1582	249	Engineer	Hazards Control
PE	1526	249	NIF maintenance engineer	Plant Engineering Maintenance
HC	1515	270	Physicist	Hazards Control
NF	1715	270	Program leader	NIF Programs
PT	1649	270	Physicist	Physics & Advanced Technologies
CO	1622	285	Computer scientist	Computer Applications Organization
CO	1662	285	Computer scientist	Computer Applications Organization
CO	1686	285	Computer scientist	Computer Applications Organization
CO	1727	285	Computer scientist	Computer Applications Organization
CO	1624	324.1	Computer programming associate	Computer Applications Organization
ME	1421	338.1/339.2	Engineering	Mechanical Engineering
ME	1630	391.1	Division superintendent	Mechanical Engineering
BO	1614	405.3	Administrative specialist III	Procurement & Materiel
CO	1707	405.3	Administrative specialist III	Computation
EE	861	405.3	Administrative specialist III	Electronics Engineering
CO	1706	405.4	Administrative specialist IV	Computation
DO	1613	405.4	Administrative specialist IV	Director's Office
TI	1535	422.3	Senior library assistant	TID
EZ	1577	524.2	Computer programming technologist	Energy & Environment
CO	1623	524.3	Senior computer programming technologist	Computer Applications Organization
ME	1239	533.3	Senior technologist	Mechanical Engineering
EE	1520	538.1/538.2	Coordinator/technical coordinator	Electronics Engineering
EE	1518	538.3	Senior technical coordinator	Electronics Engineering
EE	1695	538.3	Senior technical coordinator	Electronics Engineering
SS	1627	655.1	Protective service officer	Safeguards & Security
PE	1599	822.2	A/C mechanic	Plant Engineering
PE	1527	862.1	Maintenance mechanic	Plant Engineering

Technical Meeting Calendar

Friday  
**16**

**INSTITUTE FOR GEOPHYSICS & PLANETARY PHYSICS**  
"High-Energy Emission From Active Galaxies," by Greg Madejski, Stanford Univerity. Noon, Bldg. 319, room 205 (uncleared area). Contact: Joanna Allen, 3-0621.

**INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH**  
"Combinatorial Morse Theory and Persistence With Applications to Distinguishing Noise From Feature," by John Harer, Duke University. 2:30 p.m. Bldg. 451, room 1025 (uncleared area). Contacts: Valerio Pascucci, 3-9422, or Leslie Bills, 3-8927. For more information see <http://www.llnl.gov/casc/calendar.shtml>

Tuesday  
**20**

**H DIVISION**  
"Cometary Impacts and the Origin of Life: An Experimental Perspective," by Jennifer Blank, UC Berkeley. 10:30 a.m., Bldg. 211, room 227 (uncleared area). Contacts: Neil Holmes, 2-7213; Donna Vercelli, 2-0976.

Wednesday  
**21**

**INFORMATION SCIENCE & TECHNOLOGY**  
"Applying ISM and LS&T Expertise to Solve Problems for NIF," by Lloyd Hackel, LLNL. 1 p.m., Bldg. 481 auditorium (uncleared area). Contact: Bernice Wootton, 3-8578.

**SYSTEMS & NETWORK DEPARTMENT**  
Macintosh Technical Seminar series. A discussion about RAID (Redundant Array of Independent Disks): how it works, how to troubleshoot and administrate it, and what to avoid. By Mark James, SoftRAID, LLC. 10:30 a.m., Bldg. 543 auditorium (uncleared area). SoftRAID is a commercial product that comes bundled with some Macintosh servers and high-performance SCSI cards. Contact: Becky Frank, 3-2879.

Thursday  
**22**

**CENTER FOR GLOBAL SECURITY RESEARCH**  
"After Globalization: Future Security in a Technology-Rich World," by T.J. Gilmartin, senior fellow. 10:30 a.m., Bldg. 132S, room 1784. Contact: Tami Alberto, 2-5969.

**INERTIAL CONFINEMENT FUSION**  
"Liquid Water at High Pressures and Temperatures," by Jon Henry Eggert, Colorado School of Mines. 10:30 a.m., Bldg. 219, room 163 (open area). Refreshments will be served. Contact: Gilbert Collins, 3-2204.

Monday  
**26**

**MATERIALS SCIENCE & TECHNOLOGY**  
"Recent Developments in Density Functional Approaches to Nanoscale Materials Structures and Properties," by Thomas Frauenheim, Universitaet Paderborn, Germany. 10:30 a.m., Bldg. 235, room 1090 (uncleared area). Contacts: Andrew Quong, 2-5641, or Linda Jones, 3-8839.

Wednesday  
**28**

**INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH**  
"Optimal Preconditioned Eigensolvers for Very Large Symmetric Eigenproblems," by Andrew Knyazev, University of Colorado. 10 a.m. Bldg. 451, room 1025 (uncleared area). Contacts: Panayot Vassilevski, 3-5685, or Leslie Bills, 3-8927.

March  
**1**

**PHYSICS & ADVANCED TECHNOLOGIES**  
"B(M1)-Values in the Band Crossing Region of the Strongest Shears Band in 197Pb," by Jeffrey Cooper, Yale University. 10:30 a.m., Bldg. 211, room 227 (uncleared area). Contacts: Lee Bernstein, 2-0377, or Pat Smith, 2-0920.

Deadline for the next calendar is noon, Wednesday, Feb. 21.

- Address e-mail to [tmc-submit@llnl.gov](mailto:tmc-submit@llnl.gov) or fax to 2-9291.
- Mail listings to Technical Meeting Calendar, L-797.
- Telephone ext. 2-9709 for information regarding the printed calendar.

For information on electronic mail or the newsgroup [llnl.meeting](mailto:llnl.meeting), contact [registrar@llnl.gov](mailto:registrar@llnl.gov)

## NEWS OF NOTE



# Office guides Lab in protecting classified information

As the Lab's three-year Self-Assessment Program for all classified documents moves into its second phase, the Classified Document Project Office is available to help Laboratory personnel with controlling and protecting classified information.

With the number of classified documents reaching more than 1 million, the CDPO was founded in 1991 to help the Laboratory establish clear and comprehensive procedures for the protection and control of material, provide training and other educational services, and evaluate program effectiveness using assessment techniques. Since these classified holdings now include accountable media, the CDPO wants everyone to realize that the word "document," with respect to classified, has always encompassed other material forms including computer media.

The assessment of classified documents, mandated by DOE, is conducted by the CDPO to ensure all document custodians at the Laboratory are in compliance with DOE policies and directives on the safeguarding of information.

Approximately 2,700 people own classified material at the Lab. As part of the Self-Assessment Program, all classified document custodians must answer a document custodian checklist, and then check their documents within their repositories against listings prepared for them by their directorate classified administrative specialist (CAS).

This assessment is designed to identify whether custodians have the classified materials that they have been assigned (accountable documents), what material they have had access to (non-accountable documents), whether they have any documents that are not on the lists, and whether any documents kept for a long period of time can now be destroyed. In addition, the CDPO conducts random repository validations to make sure classified materials are marked and stored properly, and if any documents are accountable, they are visually accounted for.

"We're not interested in assigning blame. We are looking for the weak links so that we can build



MARCIA JOHNSON/TID

The CDPO staff (from left): Harry Briley, Maylene Wagner, Judy Sanders (background), Scott Turnquist, Deborah Mulvey and Peter Kelly.

them back up," said Deborah Mulvey, CDPO policy and training administrator.

"People at the Laboratory have always been very conscientious about protecting classified material," said Maylene Wagner, CDPO manager. "Our office is here to help them when they have questions about the best way to ensure those protections remain viable and valid."

The CDPO's staff consists of four people. Additional staffers to Wagner and Mulvey include the Livermore Administrative Document System Administration and Training team of Sharon Dodson and Judy Sanders, who support LADS (the centralized computer system used at LLNL for accountable and non-accountable documents, and media) and the CAS members. Other AIS support team members include Sanni Schreck, Harry Briley, Scott Turnquist and Peter Kelly.

The CDPO office also provides training programs tailored to the specific needs of various levels of personnel working with classified matter. Programs include:

- SC9591-W Classified Document and Media for Users — A Web-based class that helps the newcomer to classified handling get started and is

a prerequisite to the classified document handling class ([http://www-security.llnl.gov/ssdpub/Users\\_SC9591/home.htm](http://www-security.llnl.gov/ssdpub/Users_SC9591/home.htm)).

- SC9590 Classified Document Handling — A half-day course covering all aspects of classified materials protection and control. This course is primarily for those who are new to handling classified matter and can serve as a refresher to brush up on the latest policies. Call Deborah Mulvey, 3-8119.

- LADS Training — An eight-hour training course explaining the operation of the Livermore Administrative Document System. LADS is an information control computer system managed by the CDPO. This course is for classified administrative specialists and alternates. Call Judy Sanders, 3-5911.

- Classified Instruction — Personalized training for your directorate, division or office group. Call Deborah Mulvey, 3-8119.

In addition to these programs, the CDPO conducts assessments for each classified workstation, as well as custodian holdings; promulgates policies and procedures through the "Classified Document Users Manual; provides a Web page to view the latest policies with regards to classified materials; and keeps an updated list of all classified document handling and storage locations.

The CDPO office works closely with Safeguards & Security, the Materials Control and Accountability Program, and the Office of Classification and Export Control.

"There are so many classified documents, and the procedures for maintaining those documents continuously change," explained Wagner. "Keeping up with these documents is like painting a bridge — you start at one end and work your way to the other, then you start back again. We're here to help people implement the policies and procedures," Wagner said.

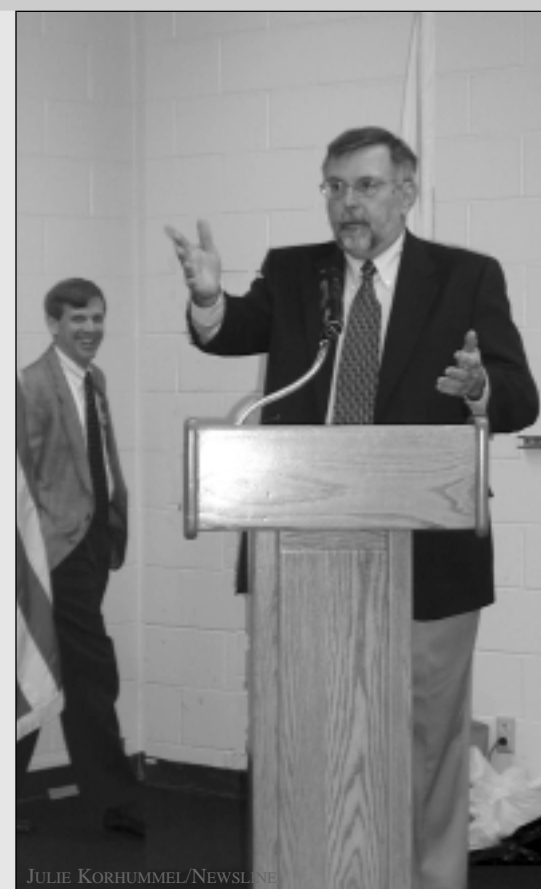
If you have questions regarding the assessment or storage of classified documents, or would like to schedule a training session for your area, please call the Classified Document Project Office at 3-8119. You can visit the CDPO's Website at <http://cdpo.llnl.gov>



MICHAEL ANTHONY/TID

## Laboratory honors Bob Kuckuck

Employees and Lab managers both past and present turned out last week for a special reception to honor Bob Kuckuck, the recently retired deputy director of Operations. At left, Willy Cooper (left) presents Kuckuck with mementos from the Nevada Test Site. At right, Kuckuck shares a few thoughts concerning his 37 years at the Lab. The event was hosted by Director Bruce Tarter.



JULIE KORHUMMEL/NEWSLINE





# CLASSIFIED ADS

See complete classified ad listings at  
<https://www.ais.llnl.gov/newsline/ads/>

### AUTOMOBILES

1997 - Chevy Blazer LT, 4WD, 4DR, black w/grey leather, moon roof, loaded, 56K miles, \$17,995 OBO. 209-832-3331

1987 - mazda 323dx,5 spd,a/c,sunroof,4 door,smogged, runs good,rv tow bar/wiring installed,good brakes,tires, paint--\$1200. 209-524-7126

1997 - CHRYSLER Town & Country Lxi Minivan 65,000 Miles,V6 3.8 Liter,transferable warranty,Leather,Dual Power Seats,to many options to list all,\$17,500.00 925-519-4084

1992 - Cadillac Sedan Deville. Loaded. Great Cond. \$7,800. 209-825-9977

1997 - Ford Contour air auto power locks and windows very good cond. 86000 miles \$7000. B.O. 209-836-0611

1988 - Mercedes,Slick Black,loaded, call for details 209-529-0431

1994 - cadillac STS,V8 Northstar, all power,snrf CD, security, excellent paint and interior, champagne, 122k fwy miles. \$8900 obo. 925-362-4502

1993 - Pontiac Grand Prix. A/C, C/C, AM/FM/Cassette. 78K mi on engine, 134K mi on car. Excellent condition. \$3500. 925-485-1988

1992 - Toyota Celica GTS, 119k miles, 5-spd,2-dr,AC,Pwr windows & dr locks, ABS, new tires, sunroof, excellent condition \$6900 OBO 925-823-8995

1997 - Lexus 300ES - 34K miles. Loaded, automatic transmission, Leather seats, chrome wheels, sun roof, CD changer - EXCELLENT condition. \$26,000.00 209-599-3781

1983 - Mazda RX-7 GSL. Loaded, 5 sp., leather, exel. cond., looks and runs great, 105K miles. \$2975. 925-371-1854

1986 - Ford Thunderbird Turbo Coupe. 4 cyl, 5 sp, A/C, Power seats, doors, locks. Needs paint. \$1,000.00 OBO. 925-456-3010

1991 - saturn sport-coup 184k miles,one owner sun-roof, great condition \$4000 925-461-5045

1994 - Chrysler Town & Country Mini Van - 3.8 liter V-6, Auto, AC, AM/FM/CD, leather, roof-rack, excellent condition, 85.6K miles, \$8499 OBO. 925-447-0383

1993 - Toyota camry le,4dr 100k mi loaded,excond 7,000 obo 925-443-5652

1992 - Mercedes 190E 2.6, sunroof, integrated phone, power seats/windows, 5 CD changer, excellent condition. Must see. Blue books at \$12,500. \$9,500/obo. 925-648-0671

1989 - Ford Taurus, power everything, AM/FM cass,auto,air. 124k miles. Good commute car. \$2,000. 925-447-6033

1993 - Ford Explorer XLT,4Dr,4WD, single owner, 57K miles,towing package,new tires, Rancho 9000 shocks, 60K tune up, clean, \$10,500. 925-447-8313

2000 - Saturn SC II, 3 door, auto, cd, air, pw, 7,700, 36 mpg. 209-492-0270

1994 - Ford T-Bird, V-8, sun-roof, loaded, well maintained, looks good, runs good, records available, \$6500 obo 925-455-5675

### AUTOMOBILE ACCESSORIES

F14 inch TIRES: 14 x 7:00 good used bias TIRES. Heavy duty. fit many cars/great for trailer or pickup. 2 for \$20 925-447-7070

Pro Comp 2-1/2 in. Lift Kit for 1987 to 1995 Jeep Wrangler. Includes all parts, instructions and springs. \$300.00 925-455-0772

2 mud/snow tires,one tire & wheel(new)-205X75XI5- 925-735-6002

1994 Dodge Stealth factory shop manual. New in box. Never used. \$35.00 925-443-1390

Tires, Brand new off 2001 chevrolet 4x4, LT245/75 16 inch 10 ply radial all terrain. \$350 obo 925-447-4611

Bike Racks(2),factory Toyota, mounts to 4Runner roof rack and I think they will fit others. With instructions. New \$80ea. Sell both for \$50. 925-443-8886

### BICYCLES

Cannondale Delta V 1000 21 spd. mtn bike. Full suspension, fox rear shock, shi-mano decore derailer, gripshifter. \$550 209-368-4286

Mens mountain bike. new tires, excellent \$120 925-736-7799

Mountain bike, Trailblazer 15 speed, brand new won in raffle, \$50 firm 925-447-4611

### BOATS

Gas tank, 12 gal. portable, fittings for Mercury outboard, \$50. 209-825-4465

Furuno model 1720 marine radar. 7 inch crt display, 0.25-16 mile range, 16 inch ray-dome.\$700.00 925-455-0859

1998 MB Sport B-52, 21ft. Wake Boat. V-210 pwr, only 100hrs, h/w shower, pro-flight tower, blt-in balast, \$3k stero, lots of extras. \$26k OBO 925-634-0560

Porta Bote folding boat--great for fishing & camping. \$325 925-443-6268

### CAMERAS

New Albums/carrying bags,glacene neg.holders Twin lens camera 4 lens 925-735-6002

Canon EOS ELAN SLR 35mm camera, autofocus 28-105 Canon ultrasonic zoom lens, UV and circular polarizer filters, mint condition, \$475. 925-443-2510

### ELECTRONIC EQUIPMENT

Brother Word Processor,monochrome monitor keyboards 925-735-6002

HiEnd home theater system \$400; N64 game system; BOSE 901 with equalizer \$250; B&O linear tracking turntable \$75. Offers accepted. 925-736-7799

Flatbed scanner, Epson Perfection 600, 24 bit color, 600 dpi, scan up to 8.5 x 14, SCSI II interface, includes software for PC or Mac \$75 925-447-6450

DEL Optiplex GX1 w/Pentium,2 GIG HD,32 Meg Ram,CD,Floppy, & Zip Drive, Has Windows NT loaded on it. \$250. 925-373-8360

80 mHz computer w/printer \$50.00 925-778-2699

KEYBOARD TRAY-TWO PRINTERS. All-metal desktop tray, Apple Color Stylewriter serial, HP LaserJet IIP parallel. Make offer.. 925-455-4666

IBM XT computer with Epson printer and IBM Enhanced color monitor - everything works fine - \$150. 925-447-8415

### GIVEAWAY

1971 Hodakas 2ea. Ace 100,basket cases,many useable parts, 925-449-7031

Puch Maxi moped. Two horsepower. Does not run. 925-443-1390

Camper shell,white, fits 79 thru 83 Toyota short bed pick-up 925-634-3516

GE upright freezer. Runs fine except gets too cold. Fix thermostat or convert to wine cabinet with external control. 925-449-1384

### HOUSEHOLD

Huge household sale: Avon, books, dolls, furniture, tools, dishes, records. Sat., 2/17, 9-4; Sun, 2/18, 9-12. 4168 Florida Ct., Livermore. 925-449-7086.

DESK, metal, solid, 50 x 19, great for bedroom. Drawers on right can double as dresser \$45 Livermore 925-447-7070

Desks - one composition-wood computer desk with hutch, Cherry finish, \$85; one HON metal office desk, single pedestal, tan with dark top, \$45. 209-832-3331

New Elvis pic in frame,Battery back up for computer,lawn mower/drapes/rugs/rods new beach chairs 925-735-6002

TEAK DESK. 24d x 48w plus 16in drop-leaf extension. 2 drawers can be on right or left side. \$50. 925-373-7766

Sofa, leather, cream color sectional with 3 recliners, 1 year old, excellent condition, \$1500.00. Call 925-829-0838

Couch-sectional, light gray chenille fabric, good condition,5 pieces w/ottoman, \$250obo; 3 matching oak tables,\$150obo 925-467-1840

Solid wood furniture (Woods End), couch, chair,coffee and end table. All fabric replaceable to look new. Must see! All for \$300. 925-516-2774

MOVING SALE- 432 Thrasher Ave., Liv. Feb. 17-18 Sat. 8-4 Sun. 9-1. Adult, Baby, Toddler Clothes. Car seats, Bassinets, Toys. Sofa, Dining Set, etc. 925-449-8786

Moving: 8pc Rattan lounge set, Glasstop oak dinning set with 6chairs, modern walnut desk, 17in SonyTV, best offer takes. 925-736-7799

Sit n Stand dbl stroller, navy/green plaid, \$100. Dhurrie rug, 5x8 multi-color, \$20. Elmos RC raceway, new, \$25 925-294-9022

Oak game table with 4 red velvet plush chairs, excellent cond. - \$1000 209-239-5685

Refrigerator/freezer, GE side-by-side, 33in wide, white, good condition, \$150/B.O. 925-443-3106

Bedroom set, twin, 1920s English Oak: bed, desk & chair, dresser & mirror. B/O. 925-443-4585

Breadmachine - Regal KitchenPro - used only 2 months - super clean with box and manual: wife just upgraded to \$200 model. \$70. 925-447-8415

Solid oak king size bed set, w/headboard and mirror, and 2 full height end sections with wardrobe and drawers. \$995 obo 925-803-1443

Chair, large sized Lazyboy rocker/recliner, tan colored fabric, excellent shape, arm and head covers included, \$150 OBO. 925-447-8011

BackUp Power - 12 panels, Inverter, Mount, Batteries. Siemens, Trace, Trojan components. System is in Southern Oregon. Best offer over \$6k. 925-829-1352

Oak bedroom set.Captains bed with six drawers. Queen size. Mirrored headboard, shelves,nightstands, dresser. Firm mattress included. \$500.00 925-245-1114

Couch-4 pc sec w/sep recliner & queen slpr. 5 yrs.-gd condition/tan & blue. \$400 209-836-3041

Dirt Devil lightweight vacuum \$25, Rubbermaid food storage containers w/lids \$1 each, all like new. 925-516-2728

### LOST & FOUND

FOUND dark grey eyeglass case and glasses on South gate Dr. just before noon on Feb. 1st, I saw them fall while you were riding a bike. 2-2461 or 209-239-2639

Lost: 20Year LLNL Service Award watch-band attachment on 1/24 in or near B543 and B439 areas. Gold color, LLL logo, 3 stones. 925-455-6089

Lost: Red mohair scarf, approx. 7 ft. long. Cherished winter item. May have been lost in b.132S or TR1879 in mid-Jan. Please call 2-8300 if found. 925-484-4191

### MISCELLANEOUS

Canadian Currency,leather lift belt 925-735-6002

Kodak Carousel Slide Trays - \$5.00 each, 10 available. 925-371-1854

Kitchen Table, farmhouse style, light wood top with white legs, 4 matching chairs - \$75 925-467-1840

Ladders 20ft/ext & \$45 8ft/step \$15,Heavyduty NEW Router+bits+table \$90; Sears table saw \$120; 2 new sawhorses \$20; BO accepted 925-736-7799

Gas furnace, 3yrs, 50 kBTU (2 ton blower), \$150. 2in Al. blinds, navajo white, 70x36 (2) 70x48 (1), \$40 per. Wagner airless painter, \$40 925-294-9022

Custom made womans Olathe cowboy boots, large size 6, Eastern Diamond rattle snake, never worn,\$300. 209-825-4465

Ski/snowboard clothes: jackets & pants, medium & large sizes, \$30-40 each 925-447-6450

Apple 6100/66 80 Meg HD,24 Meg Ram,Floppy and CD Drives. Great for Games and could be hooked up to internet. \$ 75.00 - 925-373-8350

Crib w/ mattress and changing table. Light colored wood. Good condition. \$75. 925-371-1607

GE SBS Refregerator, ice maker, runs well (asking \$450). Washer and Dryer, runs well (\$200 each, \$350 for both). 925-803-1443

Hickory flooring 5 in. planks, select, 10-14 ft., bevelled, <90 sq. ft. \$4/sq ft.; Port-A-Nailer hardwood nailing tool \$175; Nails >750, \$10. Dave 925-516-8716

Drafting table. Tilts and elevates. Very sturdy. \$75.00. 925-456-3010

Kids Laptop Learning Computer-Comquest Jr.with two program cartridges. Ages 4 and up.\$40 obo. 925-443-8886

Little Tykes table w/2 chairs \$15.00. MiniMax workout bench \$50.00. Water bottle dispenser \$15.00. 925-778-2699

Living Rm Set (Woods End), couch, chair, coffee and end table. All in good shape. Solid wood construction w/replaceable fabric. All for \$300. 925-516-2774

Little Tykes merry go round octopus \$48, 2 Fisher Price Car Booster seats \$42 each 925-516-2728

2 sets Disney Fun-to-Learn, 19 volumes each, elem age, \$40. Also Berenstein Bear Collection, \$10 925-516-7524

Sand blaster, Campbelland Hauselt, 5 gal. cap, \$45 925-829-3175

MOVING SALE: Woodworker bench w/2 vises \$100; hand & power tools, electronics equipment, microscope, desks, chairs, plus much more. 925-449-2008

Inversion Table for Sale...Less than 1 yr New...Helps those wanting relief from back pain. \$250 or best offer. 925-294-8781

Telescope - Meade Starfinder, 10inch Newtonian (mirror-type), in Dobsonian mount, two eye-pieces, star-charts. Gathering dust: \$350obo. 925-373-3146

Cement mixer; electric. Old and reliable. Must sell. \$150 or best offer. 925-443-7777

Ski lift tickets! One Heavenly Valley \$50 (regular price \$57) One Sugar Bowl \$43 (regular price \$50) 925-846-9564

Reddy Portable Propane Heater--model RLP100 65,00 to 100,000BTU heats up to 47x50sq.ft. area 925-447-6834

HEALTH RIDER, low mileage unit in excellent condition. Seatcover included.\$190 or BO 925-828-5225

For Sale: Mens leather jacket, size medium. \$50 925-455-8609

1997 Battery operated Boys Jeep, blue, Great condition, sons too old now. \$50.00 925-447-8291

Barbie Motor Home \$10.00 Barbie toys, Hair dryer, Boat, Jeep, Truck \$2.00 ea. 925-443-8690

Solar thermal panel set - high efficiency finned copper tube with glass covers. Need TLC, will then heat pool or tub. \$500 for all. 925-283-3824

Genuine Harley Davidson Motorcyle Helmet (leather) Complies with DOT Standards. 1/2 Bad Boy XL Never Worn....new \$165, asking \$100.00 925-373-1964

Nintendo64, 4 controllers, 2 memory cards, carrying bag, 8 games, Tony Hawks, Rush2, Hockey, StarWars, \$200 209-825-0326

Tread Mill ProForm Crosswalk, fitness monitor, incline adjust Paid \$500.00. Make a reasonable offer. 925-449-0430

Moving sale!! Various tools, saws, grinders, sanders. Too many to list 209-823-1059

Stroller-Peg Perego. Compact, converts to carriage. \$80. Chicco activity table with train and building blocks, was \$35, asking \$15. 925-454-0877

### MUSIC INSTRUMENTS

Yamaha Electrc Guitar (Black) with Marshall Amp. \$200 925-457-5178

Soprano Melodion, Suzuki S-25 with case, 2 full octaves, never used. You blow, play any tune or chords on keyboard. \$50. 925-455-0383

YAMAHA CLAVINOVA KEYBOARD, CVP-8, black, ROM music, 16 rhythms and voices, performance memory, sequencer, \$1500 209-754-4367

Yamaha DD50 Digital Drum set. \$130/obo 209-823-5085

### PETS & SUPPLIES

Looking for a good home for two very loving adult cats. Healthy with current vaccinations. Hard to give them up but fiancée is allergic. 925-371-5393

Keep your horse happy. Outdoor horse blanket/windbreaker for sale, \$75. Very good price. Very good condition. Purchased brand new in November. 510-657-5876

Red Queensland puppy, male, 3 months old, has shots. Looking for a home. He is a cutie, and has a great nature. 209-847-7432

DALMATION. 6-yr-old AKC-reg.female, housebroken, spayed. Sweet, loving, healthy pet needs more space. Ideal for

active family w/children. Free. 925-417-8813

Free to a good home or ranch! 2 year old Queensland Healer (Blue) 209-599-1059

Arabian mare,6 yrs, 14-3,grey, polish/spanish lines, started under saddle, strong, nice personality, endurance/hunter/ show hack, \$1500 209-847-1231

### RECREATION EQUIPMENT

AB-Roller (for situps) brand new. \$25.00. 925-443-7422

Exercise equipment: Climber + Multipurpose gym exerciser both \$25, Karaoke cassette player \$15, 3 pairs of skis \$15 each 925-736-7799

Treadmill-Softstrider by Healthrider. LED displays elapsed time, speed, distance, incline, calories burned. Hardly used. \$450. 925-513-2784

Skis, Dynamic VR27 (200cm) with Soloman 957 bindings, ski bag, \$150 925-447-6450

Ski clothing/equipment, youth/adult, many items, some barely used, priced to move; call to inquire. 925-443-3106

1985 Vacationeer Camper. 11 1/2 feet long, fully self-contained. A/C, loaded interior, excellent condition inside and out. Must see. \$5,000.00. 925-456-3010

Nordic track \$25, Cardio glide \$20, ab roller , \$10 925-447-4611

Ab Roller with tape.\$15 Adjustable stepper with tape.\$15 both for \$25 925-443-8886

Home Gym-3 Station,Vertical Raise/Dip,Stair Stepper,Weight Station w/Bench Press,Lateral Pulldown,PecDec,Arm/Leg Curl,Arm/Leg Press \$200.00 925-371-1374

Norditrack Ski Exercise Machine, Classic model, like-new condition, \$125.00 925-828-2609

Skis, Boots, Poles. Downhill (Dynamic/Nordica), Cross-Country (Fisher/Salomon), & Back-Country (Karhu/Asolo). Boots sz 9. Please call for details. 925-455-4415

Full size camper: frig, stove, bed, table shower, toilet. moving need to sell \$500 209-832-1750

1987 Itasca Sunflyer 22ft Class A Motorhome. Very good condition. Lots of extras \$10,750. 925-455-8980

Excerciser Lifestyler Cardio bike with monitor. Paid \$250.00. Make a reasonable offer. 925-449-0430

Moving Sale!!! Various sporting goods for hunting and recreation. 209-823-1059

NordicTrack manual treadmill - \$100.00 HealthRider - \$75.00 LifeCycle - \$100.00 925-447-1126

### RIDESHARING

Express your commute, call 2-RIDE for more information or visit the web site at <http://www-r.llnl.gov/tsmp/> for more information

Ceres/Modesto - 14 psgr Enterprise luxury vanpool, 7:00-3:30, \$120/month 209-537-0229, ext. 3-6631

Discovery Bay - Existing carpool of 2 looking for 1 or 2 to join us. Please call for more information. 925-634-5754, ext. 3-5481

Fremont - Vanpool needs driver for half of route.Decoto/ Mission/Paseo Padre. 8am-445pm.Get \$5 off and tax incentives. 510-792-7848, ext. 4-3791

Tracy - South part of town; seeking 1 non-smoking rider/driver for 4-person carpool; 8:00 - 4:45. 209-835-8065, ext. 2-5859

Oakland/ Montclair - Montclair/580, friendly vanpool, reading lights, reclining seats. 8:15 - 5; Stops Montclair village, Lincoln/Hwy 13, \$120/Mo. 510-547-4040, ext. 2-0064

Palo Alto/Menlo Park/Mountain View - flexible,occasional 650-838-9451, ext. 3-3330

### SERVICES

Getting Married? Wedding Video Production by valenz17.com. 925-457-5178

New clients:2 for 1. Purchase 1 hour massage (\$50/hr) and get one free, outcalls for the Tri-Valley area. Call for details. 510-791-8623





## THE BACK PAGE

### ENERGY

*Continued from page 1*

Need for Nuclear Power.” His talk was based on an article he co-authored with Richard Rhodes published in the January/February 2000 edition of the journal *Foreign Affairs*.

Beller said the article “counteracts” a rash of recent articles “that have appeared about nuclear accidents and nuclear waste.” The article has attracted the attention of congressional representatives and was cited in a *Wall Street Journal* editorial.

If domestic and global economic growth are to continue apace, nuclear power will have to be a more important part of energy production than it is today, he said. “We use energy to do good things for people worldwide — build and light schools, run hospitals, power agricultural machinery and purify water, for example. Prosperity depends on energy but many don’t have enough.

“Our global neighbors need more energy. We will continue to see growth in global population and power production,” Beller said, noting that 2 billion people don’t have access to electricity and a billion people “don’t have access to clean water.

“Electricity is needed for development, prosperity and health,” he said. “The alternative to energy-sustained development is suffering.”

Electricity’s share of power is growing and to meet the demand “we’re going to need thousands of new power plants by 2050.”

Energy production will need to come from a variety of sources — wind, solar, gas and nuclear, Beller said, adding that currently oil, gas and coal are the world’s primary source of energy — 85 percent. “Most energy comes from burning natural resources, hydrocarbons.

“In our lifetime, we have enough natural resources, oil and natural gas,” he said, though growing environmental concerns about global warming and other potential effects of pollution have raised questions about the wisdom of “burning things” to generate power.

The coal industry faces more issues than just global warming, he said, explaining that byproducts of burning coal to produce electricity include acid rain, arsenic, mercury, cadmium, lead and other pollutants. “And radioactive emissions exceed nuclear power.”

Also, coal plants in the United States generate 100 million tons of coal ash that must be disposed of each year.

Natural gas, the current fuel of choice for power generation, also has drawbacks, Beller noted. Gas is highly explosive and releases radon. The price of gas has also been volatile.

On Aug. 19 of last year, there was a one-kiloton natural gas pipeline explosion in New Mexico that caused enormous damage, he recalled. “People think nuclear power is risky and forget about things like this.”

Nonetheless, natural gas “is the energy of the coming decade” because it is affordable, plentiful, clean, characterized by high-generation efficiency and “plants can be built very quickly.”

For all their political appeal as environmentally friendly, renewable energy sources such as solar and wind power also have drawbacks and are not always used appropriately, according to Beller.

Wind energy is not as “cheap, clean and green” as touted “because of the construction materials, such as steel and concrete, required to install windmills,” he said. “It takes a lot of land for a windmill farm.”

Renewable energy is not always reliable when power is needed, he added, citing problems with the Wisconsin wind project, which operates at a fraction of its capacity because of a lack of wind. “When you need air conditioners in Wisconsin, the wind isn’t blowing.”

Because of the vast tracts of land required, windmill farms also suffer from “NIMBY” syndrome — or “not in my back yard.”

Beller said “the actual costs of ‘green’ electricity are hidden from the public” because the billions of dollars spent on R&D, federal and state subsidies, energy surcharges and tax abatements are little scrutinized.

While “renewables” should be part of an overall energy strategy, these are inefficient, producing little energy per unit resource, Beller said. “Renewables should be used where appropriate. They can make an important contribution.”

To meet future energy demands, diverse sources of energy will be needed and recognition of that is fueling the current resurgence of nuclear power, Beller said, adding that nuclear power plants around the country are being upgraded and refurbished and new plants are being planned.

“Nuclear power is cheaper than any other energy source,” Beller said. “Nuclear power plants in the United States have the best operating and safety records of anywhere in the world.”

The consolidation of nuclear power companies, such as the PECO Com Ed merger, has served to improve the efficiency and management of nuclear power. As a result the time of outages for reactor refueling has been greatly reduced.

“Nuclear power has minimal environmental impact,” Beller said, reiterating a recent statement by former Energy Secretary Bill Richardson that “nuclear energy is clean.”

Nuclear energy is needed for the United States to fulfill its commitment to global pollution reduction goals. “Without nuclear, we will not meet our Kyoto commitments,” he said of the recent conference on global warming. “Nuclear power is an important factor for achieving carbon emission reductions in developed countries.”

Though polls of attitudes show about 64 percent of the public favors nuclear power, there’s a “perception gap,” Beller said. “They don’t feel bad about nuclear power, but they think other people do.

“We have a public political information problem,” he said.

To close the “perception gap” and promote public awareness, the nuclear industry is reaching out through sponsorship of Indy car racing. “A part of our problem in the past has been that we don’t know how to communicate with the public,” Beller said. “We have to try different ways to attract the public’s attention. We now know we can reach the public through nuclear industry sponsorship.”

Nonetheless, to reassure the public the nuclear industry must still address issues of proliferation, spent fuel disposal and transportation. “Proliferation is a global issue and the International Atomic Energy Agency (based in Vienna, Austria) has to be a part of the solution,” he said. “Strong infrastructures are needed to protect nuclear technologies and nuclear materials.

“Unfortunately, nuclear infrastructures, such as universities, research reactors and national labs, in the United States and Europe have declined in the last decade.”

While the DOE is still trying to develop a repository for spent fuel, Beller said, “the transportation of spent fuel is safe.”

Despite increases in government funding for research and development and a resurgence of nuclear energy, the industry faces formidable obstacles. “We need policies that level the playing field” and commitment to R&D funding “based on science and real potential.

“We need leadership to give the public the nuclear CARESS” — clean, affordable, reliable, environmental, safe and sustainable for the 21st century.”

March 21, 2001

**Science Day**

A Celebration of Science and Technology

Meeting National Challenges in the Next Decade

Lawrence Livermore National Laboratory

**Reserve this date!**

**Wednesday, March 21**

**Bldg. 123 Auditorium**

The Lab will showcase its latest scientific & technological accomplishments at Science Day, a daylong event featuring presentations, poster sessions and displays.

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**Presentations** Hear talks on the topic of "Scientific Supercomputing: Meeting National Challenges in the Next Decade via Integration of Theory, Experiments, Technology and Large-scale Simulation."

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**Poster Session** See a spectrum of posters, video displays and demonstrations representing all Lab programs and directorates.

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A planning committee is in place representing all Lab directorates & disciplines. Contact 2-5214 for the name of your representative.

**Questions?**

Contact Tracey Barnes, 2-5214, [barnes22@llnl.gov](mailto:barnes22@llnl.gov)

See the Science Day Website at <http://stars.llnl.gov/ScienceDay/>



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